DATE: June 3, 1998

TO: Community-Based Residential Facilities — DSL-BQA-98-020 CBRF 06

FROM: Judy Fryback, Director
Bureau of Quality Assurance — Updates DSL-BQA-97-047

Hot-Water Temperatures - Update

In November 1997, we mailed DSL-BQA-97-047 advising all community-based residential facilities of the requirements for hot-water temperatures found in section HFS 83.41(5)(d)2, Wis. Administrative Code. This code states,

> "The temperature of water at fixtures in showers and tubs used by residents shall be automatically regulated by valves and may not exceed 110 degrees Fahrenheit, except for Community Based Residential Facilities (CBRFs) exclusively serving residents recovering from alcohol or drug dependency or clients of a governmental corrections agency."

In addition, we noted that similar temperatures should be found at sinks used by residents, pursuant to the requirements in sec. HFS 83.21(4)(w), Wis. Admin. Code. This code requires the CBRF to provide a

> "safe environment…The CBRF shall safe-guard residents who cannot fully guard themselves from an environmental hazard to which it is likely that they would be exposed, including both conditions which would be hazardous to anyone, and conditions which are hazardous to the resident because of the resident's condition or handicap."

From March through May 1998, the Bureau of Quality Assurance cited and assessed forfeitures against 33 CBRFs for hot water temperatures that ranged between 130-160 degrees F. At these temperatures, severe, full-thickness scalding that causes irreversible second and third-degree burns can occur in 1 to 30 seconds. At 140 degrees, first-degree burns can occur in less than 2 seconds. Too-hot water may be particularly dangerous for the elderly and handicapped who may have circulatory or neurological disabilities that prevent instantaneous recoil from too-hot water. As a result, they may more easily be burned than other people. Recently, at least three CBRF residents and one adult family home resident in Wisconsin have received serious injuries from hot-water burns.

Hot water heaters must have a temperature of 125 to 130 degrees F, as required in HFS 83.41(5)(d)2, Wis. Administrative Code. Newer research, however, is showing that a temperature of at least 140 degrees is necessary to kill Legionella. As a result, we will not cite facilities for maintaining a hot water heater temperature of 131 to 140 degrees. However, because the temperature of the water heater must be at least 15 degrees higher than the temperature at the tub and shower, a method for tempering the water temperature is required to ensure water of 110 degrees at the tub and shower and a "safe" temperature at the sink. The Department of Commerce has advised us of several ways facilities may meet HFS 83 requirements and at the same time be in compliance with the state plumbing code.

1. Facilities may install a thermostatic mixing valve on the cold and hot water lines that lead from the water heater to the fixtures. A thermostatic mixing valve tempers the water such that water temperature will not exceed the temperature at which the thermostat is set. The mixing valve will control the water temperature at sinks, tubs, and showers served by the water line.

Because a thermostatic valve will allow hot or cold water to continue flowing if it fails, facilities may, in addition, choose to install a "fail safe" valve between the mixing valve and the faucets to which the water line is leading. Generally, these are solenoid-actuated valves that shut down the hot water supply to the shower or tub (or sink) if the water exceeds 110 degrees. Although these valves are generally quite expensive, they are they only way to guarantee that unsafe water will not reach any of the faucets served by the water line. However, neither HFS 83, Wis. Administrative Code, nor the state plumbing code requires this type of valve in a non-health care facility. You should be aware that the Department of Commerce is looking at the possibility of including CBRFs under their definition of a health care facility. If this occurs, **new** CBRFs would be required to have a "fail safe" valve.

The size of your piping and the manufacturer model design both affect the cost of a thermostatic mixing valve and a fail-safe valve. If you purchase a thermostatic mixing valve or a thermostatic mixing valve and a fail-safe valve, we urge you to shop around. We have heard that estimates may vary greatly.

Other ways facilities may meet the requirement for 110-degree water include the following. Each of these options, if not used in combination with a mixing valve, requires the installation of devices at **each** individual sink, tub, and shower that is used by residents.

2. Install a shower valve at each shower used by residents that complies with the intent of the "fail safe" system. The Department of Commerce has currently approved one such valve – the Chicago 2500 TempShield Tub and Shower faucet valve. This valve controls water temperatures at the tub and shower and shuts off the water if the temperature exceeds 110 degrees. It does not control water temperatures at the sinks and there is not an approved counterpart for installation at the sink. Another method will be required to control water temperatures at the sinks.

3. Install a faucet with an adjustable hot-limit safety stop at each sink used by residents. Safety stops keep water at the faucets at a pre-set temperature by blending the amount of cold and hot water. If the water heater malfunctions, however, and heats the water even higher than where it had been set, a safety stop will still continue blending the same amount of hot and cold water. As a result, water temperatures at the faucet will be hotter than what is expected and burns could occur.

4. Install, at each sink, shower, and tub used by residents, a temperature-actuated flow reduction valve. Depending on the faucet, these valves cost between $6 and $30 and can be easily retrofitted onto each shower, tub, and sink fixture. These valves reduce the flow of water to a trickle when the water temperature is approximately 115 degrees F. or above. We cannot recommend brand names; however, such valves are available at local plumbing or hardware stores. Because we do not have experience with the reliability of these valves, we suggest that you monitor the temperature of water coming from faucets on which these devices have been installed. In addition, these devices only limit the hot-water temperature to approximately 115 degrees F. Facilities using this option on tubs and showers will need to request a waiver of the 110-degree hot water requirement for tubs and showers.

To maintain compliance with HFS 83.41(5)(d) 2 and HFS 83.21(4)(w), Wis. Administrative Code, we ask that you:

- Routinely check the temperature of water at various fixtures used by residents;
- Take appropriate responsive action if the temperature is above 110 degrees; and

- Regularly clean the mixing valve(s) because liming from the mineral deposits found in water may eventually cause mixing valves to malfunction.

If you have questions, please contact the Regional Field Operations Director to whom your facility is assigned. Their names and phone numbers are:

Northeastern Regional Office, Green Bay	Pat Benesh	920-448-5249
Northern Regional Office, Rhinelander	Marianne Missfeldt	715-365-2802
Southeastern Regional Office, Milwaukee	Tony Oberbrunner	414-227-4908
Southern Regional Office, Madison	Phyllis Tschumper	608-243-2374
Western Regional Office, Eau Claire	Joe Bronner	715-836-4753